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AUTHOR Feldmesser, Robert A.
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ABSTRACT

Test-based funding (TBF) is the concept that allocations of educational funds from one political unit to another should be larger as the proportion of pupils in the receiving unit who have low test scores is larger. The arguments offered in support of TBF are presented. The most serious acknowledged drawback to TBF is its potential disincentive effect: it might motivate educators to depress pupil performance in order to increase their district's funding. Solutions to this problem that have been tried or suggested appear not to be effective. Limited experience with TBF so far does not bear out the advantages claimed for it. Moreover, the fundamental premise of TBF seems on reflection to be defective: A test score is not a valid indicator of educational need. Recognition of this has been concealed by the common definition of need in terms of a "deficit," and by the failure to understand that "average" performance is not necessarily evidence of equal educational treatment. Instead of abandoning allocation procedures based on socioeconomic status (SES), they should be improved, perhaps by using years of parental schooling as a measure of SES instead of family income. (Author)

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OBSERVATIONS ON THE USE OF TEST SCORES
AS A BASIS FOR ALLOCATING EDUCATIONAL FUNDS

Robert A. Feldmesser
Educational Testing Service
Princeton, NJ

Paper prepared for a symposium on "Social and Political
Contexts of the Use of Test Scores for Policy"

at the annual meeting of the
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TM005 328

OBSERVATIONS ON THE USE OF TEST SCORES AS A BASIS FOR
ALLOCATING EDUCATIONAL FUNDS¹

Robert A. Feldmesser
Educational Testing Service

It is now generally recognized that allocations of educational funds from one political unit to another -- from the federal government to states or counties, or from state governments to local school districts -- should depend not only on the number of pupils served by the unit receiving the funds, and perhaps also on its own revenue-raising capacity, but also on the needs of the pupils served. A familiar form which this recognition takes is what we may for convenience call income-based funding, or IBF: the principle that the amounts of these allocations should be greater for those units that serve relatively large proportions of pupils from families of low socioeconomic status (SES). Title I of ESEA incorporates this principle, and there are similar provisions in the funding formulae of a number of states.

More recently, it has been proposed that these allocations should be determined instead by the actual scholastic performance of the pupils in question. Since, in each of these proposals, performance is to be measured by the score on one or another type of test, we will refer to the concept as test-based funding (TBF). Under this procedure, larger allocations would be made to units with larger proportions of low-scoring pupils.

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TBF, if not an idea whose time has come, is at least one whose time may be coming. Its use has been suggested by such distinguished students of educational finance as Walter Garms (Garms and Smith, 1969), James Kelly (1970), and Charles Benson (1972), and it was recommended by the Fleischmann Commission (Fleischmann Report, 1973, vol. 1). Probably the best-known implementation of the concept is Michigan's Chapter 3 program, which dates from 1971. But New York state has had a version of it in effect since 1967 and considerably expanded it, with modifications, in its Pupils with Special Educational Needs (PSEN) program enacted in 1974. California incorporated it, in a limited way, in its Early Childhood Education (ECE) program beginning in 1973. Other states are exploring the idea. At the federal level, it was embodied in H. R. 5163, introduced by Congressman Quie of Minnesota in 1973 as a substitute for Title I; extensive hearings on the bill were held, and though it was not passed, the Education Amendments of 1974 directed the National Institute of Education to study and experiment with it further, and it is almost sure to receive renewed consideration in 1978, when the present version of ESEA expires. It therefore behooves us to examine it closely. The present examination is based on a review of the pertinent literature, the experience of the states that have tried it, and logical analyses of the concept.²

Arguments supporting TBF

There are a number of appealing arguments in favor of TBF, particularly when it is contrasted with IBF, as it usually is. The most obvious and

²This study was initiated independently of the 1974 legislation and is not the study called for by it.

important of them, and the one that seems to be regarded by its advocates as the most persuasive, is that a pupil's test score is a more direct, and hence a more valid, measure of educational need than is the income of the pupil's family. Perhaps the most unequivocal statement of this position is by Garms and Smith (1969), who wrote, in a study conducted for the New York State Educational Conference Board:

Educational need exists wherever average achievement levels are consistently and significantly below the norm ... The most direct measure of educational need ... would clearly be pupil achievement as indicated on test scores. Since the purpose of this study is to develop a way of distributing state aid which more accurately reflects educational need, the most obvious method would be to allocate funds in accordance with test results.
[Emphasis in the original.]

The authors regretfully observed, however, that several unresolved problems -- which will be considered shortly -- prevented use of that method for the time being, and so they proceeded to search instead for "some measure or measures which correlate highly with student achievement" and which would be more easily available than family income. They ended up with a measure that combined several other indices of socioeconomic status, but it was, as they said, a "second alternative."

The premise underlying such statements is that a low test score is in and of itself a sign that some extra help is needed. In fact, the argument went, the reason why additional funds had been allocated on behalf of low-SES children in the first place was precisely that their test scores were "consistently and significantly below the norm." As Garms and Kelly (1970) put it in a later study, "... there would be no need for compensatory education if the correlation between socio-economic status and achievement were reduced

to zero ..." SES was thus serving as a proxy" for test scores (Kelly, 1970; Levin and others, 1973; and Wilensky, 1972); and if so, it would be sensible to dispense with the proxy and channel the resources directly to low-scoring children to begin with, instead of trying to measure achievement with family income, which would inevitably introduce error.

Congressman Quie was led to the same conclusion through an analysis by Gene V Glass of data collected by the Office of Education's Bureau of Elementary and Secondary Education on Title I programs in 1968-69. The teacher of each pupil in the Title I schools surveyed had been presented with a list of eight types of compensatory programs and had been asked, "According to your knowledge of this pupil's critical needs, which of the following would you recommend that he participate in during the next school year?" Glass found that, by this procedure, "Approximately 34 percent of the pupils were judged to have no critical needs for compensatory programs." Teachers had also been asked to estimate the annual income of each pupil's family; more than 68 percent of the children in the lowest income category had a critical need for reading, but 10 percent of them did not have a critical need in any of the eight areas, and although 64 percent of the pupils in the highest income category had no critical needs, 19 percent of them did have a critical need in reading. "Obviously," Glass concluded, "there are many children from families not suffering from poverty who have critical needs, and conversely, there are children from poor families who may not have needs in every area" (Glass and others, 1970).

From the data presented by Glass, the Congressman extrapolated the finding that

... less than one-quarter of all students with educational deficiencies in the area of reading are in the below \$2,000 family income classification The other side of the coin is that ... many low income students are simply not in need of compensatory education (Quie, 1973).

Thus, money was being wasted by the IBF approach of Title I: funds were going to children of low SES even though they had no need of them, while they were not reaching children of higher SES who did need them. Clearly, "need" was being judged here from actual student performance as observed by teachers in the classroom. The Quie bill was seeking to increase the efficiency of compensatory-education funds by bringing them directly to the students whose performance showed they had need of them, and it would further improve the process by replacing teachers' observations with a reliable and regularly administered test.

As may already be evident in this first argument, TBF also draws strength from its association with "accountability for results" and with the growing stress on student performance outcomes as the proper criteria of the effectiveness of an educational system. TBF would of necessity draw attention to test scores, the "bottom line" of the educational enterprise, and would thus bring pressure to bear on teachers and administrators to concern themselves with student learning rather than with less important matters. Indeed, there often seemed to be an assumption that money tied directly to low scores would be more likely to raise those scores — and consequently to bring about equality among the members of different socioeconomic groups — than would money related to an index of SES.³

³ Again, we are indebted to Garms and Smith (1969) for the most forthright expression of this view: "If educational need is defined in terms of educational achievement and if resources are applied according to some measure of this need, differences in average achievement levels among different social, economic, and racial groups will hopefully decrease ..." However, for a similar opinion, see Quie (1973).

A third argument for TBF is that it makes it easier to keep the data base for allocation decisions up-to-date. IBF allocations are typically based on Census data, which of course are gathered only once every ten years; in the interim, the income distribution of families resident in the district or state might undergo substantial change. When Congressman Quie introduced his bill in 1973, he pointed out that, as of that year, states were receiving Title I money for pupils who were enrolled 14 years previously, "as if [a] 21 year-old man or woman were still in the second grade" (Quie, 1973). It would be simpler to administer a periodic performance test -- the Quie bill called for one every two years -- than to increase the frequency of Census enumerations.

The Congressman also offered one other potential advantage of TBF. Title I had consistently been under-funded, and the reason, he said (Quie, 1973), was that "the only public support for it comes from the poorest elements of our society," since they were its major beneficiaries. But under a TBF formula, funds that had formerly gone to low-income children who were not low performers would be diverted to children of higher-income families who were low performers. The result would be that support for increased appropriations would be generated among higher-income -- and politically more powerful -- families. At the same time, low-income families would not object, because even though they received a smaller share of the pie, aid for their children's education would not decrease (or might even increase), since the pie would be larger.

Problems with TBF

On the other hand, several difficulties in putting the TBF concept into practice were evident from the outset. Probably the most serious of these was that it would seem to have a "disincentive" effect: the lower the scores of students were, the more money a district would receive, which could be interpreted as a "reward" for doing an inferior educational job and might motivate educators to try to depress pupil performance instead of improving it. Conversely, aid funds would decline where test scores were rising, so that districts would lose funds "just at the time when they ... have discovered how to use them effectively" (Fleischman Report, 1973, vol. 1).

A number of solutions to this problem have been tried or suggested. One is to offer a counter-incentive to overcome the effect of the disincentive. This was the device tried most prominently in Michigan. In that state's Chapter 3 program, districts received \$200 for each low-scoring pupil in the first year of the program; in subsequent years, the districts were to receive the \$200 only for those pupils who made at least three-quarters of a year's normal gain, and they would receive proportionately less for pupils making smaller gains, down to zero for pupils making no gain. However, it proved politically impossible to carry out this scheme, for it would have meant large reductions in state aid to the districts involved; Detroit, for example, would have lost about \$5,000,000 in the first year when the counter-incentive was to have been operative. By amendments to the law, the counter-incentive provision was repeatedly deferred, and it has never actually gone into effect.

California's tactic in ECE is somewhat different. Districts are granted funds to enable them to initiate new programs in only a limited number of grades and schools, the amount of the grant depending partly upon the proportion of low-scoring pupils in those schools and grades. In later years, a district's funds are to be increased, to allow expansion of the programs into other schools or grades, only upon demonstration that the programs have been successful in terms of the district's own objectives. Since the objectives must include measures of improvement in pupil performance, these expansion funds can be regarded as a counter-incentive. But unlike the situation in Michigan, if a district does not achieve its objectives, its funds are continued at the same level rather than being reduced -- or, more precisely, rather than being immediately reduced. ECE provides for termination of these funds to a district which is refused authorization to expand in two successive years. The program is still too new for this provision to be put to the test, but the state department of education is already casting about for ways to nullify it.⁴

In both California and Michigan, the recognition has emerged that, if test scores do not rise very much, TBF contains an intrinsic dilemma: To continue aid at the same level, despite the low scores, is to allow the ineffective expenditure of funds to be prolonged, thus defeating the goals of TBF; yet to reduce or withdraw funds either belies the premise that low

⁴The funding formula for ECE is such that the proportion of low-scoring pupils cannot account for more than 11 percent of a district's grant under the program. This has greatly reduced the concern over the TBF provision -- but by the same token, it also means that the provision is less likely to produce the effects expected of TBF.

scores are an indicator of need or else constitutes a refusal to supply aid where it is needed. As one staff member of the Michigan Department of Education put it, "the kids are still there to be served" even if their scores do not increase.

Another method that has been suggested for dealing with the disincentive effect is to administer the funding test very early in the school career, or even before it begins, so that pupils' scores couldn't be depressed by their experience in school. The Fleischmann Commission, for example, urged the eventual use of "learning readiness" tests given as soon as pupils entered school, though conceding that reliable tests were not yet available at that level (Fleischmann Report, 1973, vol. 1). However, even if they were available, it is not clear that they would be an acceptable solution, for they would probably only shift the locus of the problem -- i.e., they could discourage schools from providing preschool or parent-education services, and they could introduce a disincentive effect into the home, since parents would have to decide whether to provide a favorable early educational environment for their children at the risk of reducing outside aid for the local school system and thereby increasing their taxes. A decision not to provide a favorable environment could be justified by the expectation that the schools would "make up" for it, the more so if they received additional funds with which to do so.

Concern has also been expressed over the possibility that, in order to increase a district's funds, steps might be taken to make scores appear low, whatever pupils' achievements might really be. This could be done,

consciously or unconsciously, by selecting a test level that was too difficult for some students, by instituting (or reinforcing) a promotion policy that tended to place students in a grade they were not ready for, or, in administering the test, by giving less than clear instructions, by permitting distractions, or by cutting a few minutes off the time allowed. (See also Stake, 1974.)

One way of preventing this, employed in both Michigan and New York, is to base the TBF allocations on scores received on tests that had been administered before the legislation was enacted. Continued use of such scores, however, means that the data base becomes outdated, just as with IBF allocations which rely on the Census. Local manipulation of scores could also be avoided by having the test administered by the state or by some "outside" agency; but that would add considerably to the cost and might arouse resentment on the part of local teachers and administrators, who would interpret it -- correctly -- as a sign that they were not trusted. It is noteworthy that, in all three of the states whose experience with TBF we have studied, the funding tests were locally administered.

None of the three states has collected any evidence to show how serious the disincentive effect or the temptation to manipulate scores really are or might be. (In New York, the funding formulae neither for PSEN nor for its predecessor, the Urban Education program, took any account of what happened to test scores after the allocations had been initially determined.) Perhaps the anxiety about them is unnecessary. There is, after all, a built-in countervailing force: the desire of teachers and administrators to produce high scores as evidence that they are doing

their jobs well. Communities might indeed be more pleased by rising test scores than they would be dismayed by declining financial assistance. On the other hand, particularly in districts with substantial numbers of low-SES minority-group families but with power in the hands of the majority group -- a common enough situation -- educators might evolve a strategy of "compartmentalization": preserving a group of low-performing students as a basis for additional funding while striving to improve the performance of the rest of the student body as a demonstration of their competence. Unhappily, the culture provides a convenient rationalization for such behavior. The low-performing students might well be those from minority families, whose failures educators could attribute to deficient family backgrounds over which they have no control.

The ability of TBF to generate larger appropriations of funds for education is doubtful, at least at the state level. In Michigan, it led to a one-time increase to a level which then remained constant for at least four years (and constant in actual dollars, which of course meant a decline in the purchasing power of the funds). California's ECE program was accompanied by increases in state aid during each of its first (and so far its only) two years, but they were not attributable to the appeal of TBF, which plays only a minor part in the program. In New York, Urban Education aid remained more or less constant for seven years; with the passage of PSEN in 1974, funds were apparently to be substantially increased -- but the number of participating districts was increased at the same time, from 29 to virtually all of the state's more than 700 districts, so the per-pupil

amounts will probably not increase. Actually, Congressman Quie's reason for expecting that TBF would create an overpowering coalition in support of larger appropriations of funds for education could be equally well applied to IBF. Affluent families "should" demand larger appropriations under an IBF formula because, even though they receive a smaller share than they would under TBF, aid for their children's education would obviously be greater with larger appropriations. If that point of view has not brought about the desired coalition for increased IBF appropriations, it is hard to see why it should do so for increased TBF appropriations.

One may also question the assumption that, because TBF is related directly to a measure of educational outcomes, it is more likely to bring about the equalization of those outcomes than is IBF. An analogy with experience in public health would suggest instead that dealing with low test scores after they have manifested themselves may be a less reliable way of improving them than identifying the circumstances which lead to low scores and counteracting their effects before the effects appear. These circumstances are the ones that give rise to the need for additional or compensatory educational resources; and if they include the circumstances encompassed in the notion of low SES, then the second strategy describes the rationale underlying the IBF approach.

What this implies, finally, is that the assumption which is at the heart of the TBF concept — that test scores are the true indicators of the need for educational resources — may not be valid. Close examination of the assumption confirms this doubt.

Indicators of need

In much of the recent educational literature, an educational need has been defined in terms such as "a condition in which there is a discrepancy between an acceptable state of affairs and an observed state of affairs" (Anderson and others, 1975, p. 254), or, more simply, as a "deficit" (Glass, 1970, p. 46). This definition is consistent with, and perhaps has even helped give rise to, the TBF idea. If, say, an average performance score is "an acceptable state of affairs," then a below-average score is ipso facto a discrepancy or deficit, and hence an indicator of need. Conversely, an average score would be taken to signify the lack of a discrepancy and thus the absence of a need. A couple of hypothetical illustrations may serve to show that this definition leads to conclusions that few people would be willing to accept.

Suppose that a test of reading comprehension were administered to 1,000 ten-year-old deaf children. The great majority of them would score considerably below the average for ten-year-old children with normal hearing, since the inability to hear is a serious handicap in learning how to read. But suppose -- and it is not at all unlikely -- that a few of them, say five, performed at the average. One would hardly conclude that deafness had not been a handicap for these five children and that they therefore had no need for extra educational resources. Either of two other inferences would be more plausible. (1) These children had already been getting extra educational resources in an effective way, and that is what enabled them to achieve an average score. (2) If they had not been getting

extra resources, they had extraordinary capabilities which had enabled them to overcome the effects of their handicap up until then -- and if they were now to receive that additional help, they could presumably do even better. In either case, to deprive these five children of extra help because of their average scores would surely be widely regarded as improper.

For a second illustration, suppose that a test of achievement in mathematics were given to two groups of eighth-grade children. One group lived three miles or more from the nearest school and were brought there by school bus, the other lived within a block of the school they attended and walked there; the groups were otherwise similar, and so were their schools. Suppose -- and again, it is not an unreasonable supposition -- that the mean score for the two groups were the same. Here too, it would be unwarranted to conclude that the children who lived far from school had no need for transportation services. Rather, it was probably the fact that they had been transported to school which made their average achievement in mathematics possible.

In these illustrations, the absence of a deficit does not indicate the absence of an educational need, and so the "deficit" definition of need doesn't work. The definition of "need" which is implicit in them, instead, is "a requirement for extra resources to overcome or mitigate the effects of a condition adverse to learning" -- i.e., of a handicap. If a handicapped child displays no performance deficit, it does not follow that the child has no unusual need; the inference, rather, is that the need, the requirement for extra resources, has at least partially been met.

Deafness is generally recognized as a handicapping condition. Living far from a school is a handicap, too; we might call it the handicap of "impaired access," or, more simply, of distance. It is different from deafness in that it is a socially imposed and a socially removable handicap. Society has the option, so to speak, of building a school within walking distance of every child, but it has decided that that is too expensive in areas of sparse population. Consequently, it has "under-invested" in the education of children living in such areas, and the principle of equality places society under an obligation to make up for that under-investment. It does so by transporting these children to school at public expense.

Coming from a family of low SES should be viewed as another type of handicap. Low-SES children are likely to have suffered from such educationally relevant disadvantages as inadequate nutrition, clothing, health care, and shelter and space; a restricted range of experiences; and peers and parents who provide little help in verbal development or other scholastic skills and who do not offer models of high aspirations. In short, these children, compared to others of higher SES, have also suffered from under-investment. Adapting a term employed by Levin and others (1971), and by Benson and others (1972), we may call this the handicap of "deficient capital embodiment."

When seen in this light, low SES is not a "proxy" measure of educational need, but the direct source of a need. The generally low test scores of low-SES children would signify the existence of a need, but they are the symptom of a condition, not the condition itself. If some low-SES

children achieve average scores, the conclusion that they have no special needs is unjustified. One of the more likely meanings -- just as in the case of the children transported to school -- is that their needs have so far been met, by the application of extra resources to compensate for their deficient capital embodiment. To say that "there would be no need for compensatory education if the correlation between socioeconomic status and achievement were reduced to zero" is analogous to saying that there would be no need for transportation services if the correlation between distance from school and achievement were reduced to zero; the defect in the reasoning is that it may be the transportation services which are responsible for the reduction of the correlation.

The same sort of logical slip may account for the interpretation made of the finding by Glass that about one-third of the children in Title I schools had "no critical needs for compensatory programs." Imagine a teacher in charge of a compensatory reading program for 30 pupils. If ten of these pupils are performing at an average level, and the teacher feels they will continue to do so, the teacher might well say that they have "no critical needs" for further participation. But that could simply reflect the teacher's belief that the program they are in, and the programs which preceded it, have met their needs (i.e., have been sufficient to compensate for deficient capital embodiment). A reduction in funds for that school would be called for only if there were fewer pupils like these coming after them -- that is, only if there were a change in the socioeconomic composition of its student body.

If some low-SES children have average scores and yet have not had extra resources devoted to their education, it still does not necessarily mean that they have no need for these resources. One other possible interpretation is that the schools they have attended have concentrated whatever resources they did have on instruction in reading and mathematics, the subject areas usually being referred to when "scores" are under consideration. If so, extra resources would be required by their schools to improve their education in the areas that have been neglected — science, social studies, foreign languages, and so on. Equality of educational opportunity is surely not restricted to equality in reading and mathematics; low-SES children ought to have the same opportunity as high-SES children to raise their performance level in other subjects as well.

Another possibility, as in the case of other handicapped children, is that low-SES children with average scores have unusual abilities which enabled them to overcome their handicap without additional help. (This would also be the interpretation if the test had been one given upon or before entry into school.) Presumably, if such children were provided with additional resources, their scores would be even higher, and that result should be regarded as a necessary element of equality. Educational equality can hardly be said to be complete if a high-SES child of high ability reaches a high level of achievement while a low-SES child of the same high ability reaches only an average level of achievement.

It begins to appear, therefore, that the absence of a low score is not a sign of the absence of a need for compensatory educational resources; if

that is so, the basic assumption of TBF, that test scores are the true need indicators, is called into question. Interestingly enough, even some of the proposals for TBF seem to contain doubts about it. We have noted, for example, the fear expressed by the Fleischmann Commission that, if allocations were determined by scores on a test given subsequent to school entry, districts would lose funds "just at the time when they ... have discovered how to use them effectively." Implicit in that concern is the presumption that rising test scores would mean not that needs were disappearing but that they were continuing and were being met. In H. R. 5163, allocations would have been based on the number of low-scoring children and on the number of children who were students in state-supported schools for the handicapped (as conventionally defined) or for neglected or delinquent children or who were children of migratory agricultural workers. Test scores of these latter categories of children were not to be taken into account, which implies that their needs could not be measured by their scores. It would not seem to be far-fetched to think that the same reasoning could be applied to other children whose handicaps may be less overt.

One reason why these doubts have not become more prominent may be that, as we have suggested, they have been concealed by the "deficit" conception of educational need. Another, closely related reason, which perhaps particularly explains why they have not surfaced during the implementation of the state TBF programs, may be that children who are performing at the average seem not to be "problems." They are "doing well enough by ordinary

standards" (Benson and others, 1974, p. 85), and no one knows whether they could do better. To an educational policy-maker or administrator struggling with a tight budget, it can easily seem a correct course of action not to continue to devote additional resources to the education of average-performing children when there are so many children who are performing below average. Hence, TBF would appear to make good sense.

This route to TBF, however, rests on at least three assumptions: (1) that average performance is "good enough" for low-SES children;⁴ (2) that a reduction of resources for these children will not lead to a decline in their performance; and (3) that high-SES children with low test scores will benefit from additional educational resources. We have already raised questions about the first two of these assumptions, but the third bears further consideration.

It has been pointed out above that the beneficiaries of a change from IBF to TBF would be high-SES children with low test scores, or, more precisely, the states or districts in which such children live. Indeed, it is hard to escape the suspicion that this very fact may be part of the

⁴Actually, since TBF is intended to help low-scoring children, the cut-off point for funding -- the score at which performance is regarded as being "good enough" to need no further additional aid -- is apt to be considerably below the mean. In California's ECE program, this point was at the 25th percentile; in New York's PSEN, at the 23rd percentile; and in Michigan's Chapter 3, at the 15th. The Quie bill did not specify a cut-off score, evidently, at least in part, in the belief that the problem would be by-passed by the use of a criterion-referenced test; for comments indicating that this probably would not happen, see Feldmesser (1975), pp. 75-80.

impetus behind TBF proposals, for whether or not TBF generated support for increased appropriations among high-SES families, it might well lead them to support the politicians who channeled a larger proportion of the funds in their direction. But leaving this political motive aside, the legitimate educational question is whether the low scores of high-SES children are likely to be raised by the infusion of additional funds into the districts where they live.

The answer is far from certain. In the first place, high-SES families vary in their value preferences. Those with low-scoring children may have chosen to invest less than other families in their children's preparation for and success in school, and it cannot be taken for granted that a supply of additional funds to the districts in which they live would outweigh their preferences or alter their behavior.

But suppose that the schools could make up for this under-investment, as we have assumed they could for under-investment among low-income families. Some analyses (e.g., Wade and others, 1975) show that the median family income of a school district is virtually unrelated to its per-pupil value of taxable property, which is the major source of local revenue for educational expenditures. Insofar as this is so, additional funds allocated on behalf of children with low test scores would permit high-SES districts to increase their expenditures, with the presumed effect of raising scores. Other analyses, however (e.g., Berke, 1972), show that high-income families tend to live in districts that already have relatively high per-pupil expenditures, and in that case, it may be doubted that enabling these districts to increase

their expenditures still more would bring about higher scores among their pupils. It is conceivable that, in such districts, low-scoring children have had the wrong resources applied to their education; the condition adverse to their learning has been a type of teaching style or curriculum or instructional material or other component of schooling that has not been suitable to their particular characteristics, and additional funds would permit their schools to make a thorough search for more suitable resources. But if that is so, then all districts need more funds, not only those with a relatively high-SES population composition, since the same kind of error is presumably made just as often in the case of low-SES children.

The data base for IBF

If TBF is a less attractive concept than it might have seemed to be at first glance, it might be well to reconsider IBF, to see if the latter's deficiencies can be overcome short of abandoning it altogether. For example, the problem of keeping the data base up-to-date may not be as serious as has been suggested. Determining fund allocations "as if a 21-year-old man or woman were still in the second grade" would not be so objectionable if the 21-year-old person for whom the funds were being provided in a given year had since been replaced by a second-grader of the same SES. Major changes in the socioeconomic composition of school districts probably do not take place in periods of less than a few years. Major changes in the relative proportions of low-SES people among districts probably take even longer; if so, a district with greater needs for educational resources would continue to receive larger grants than a district with lesser needs long after the original data were collected. These are conjectures that could be empirically investigated.

Although we have been using the term "income-based funding" for procedures in which allocations vary with SES, a question may be raised about whether income — which is a proxy for SES — is the most satisfactory measure of the many facets of that condition. Beside the issue of invasion of privacy, the educationally relevant aspects of the family environment are not necessarily tapped by the size of the family income. A recent comprehensive review of research on the determinants of status (Haller and Portes, 1973) led its authors to conclude that "the status fate of youth may well hinge more on the psychological than on the economic support [parents] are able to give them."

Perhaps a better measure of SES for purposes of allocating compensatory-education funds would be years of parental schooling. Data gathered from 45 elementary schools in New York state (Garms and Smith, 1969) showed that average number of years of father's schooling, or of mother's where father was absent, could account for nearly 45 percent of the variance in third-grade test scores in reading and arithmetic.⁵ In a later application of the same methodology to a larger and more representative sample of schools in the same state (Garms and Goettel, 1972), virtually the same proportion of test-score variance could be accounted for by either average years of father's schooling or average years of mother's schooling (see Berke, Campbell, and Goettel, 1972). This

⁵Citation of this kind of evidence does not constitute a reversion to the assumptions of TBF. As has been pointed out, low test scores can properly be regarded as a symptom of educational need; the problems with TBF are that it seems to mistake the symptom for the source and to misinterpret the absence of low scores. What is being suggested here is that the source of educational needs can legitimately be sought among the correlates of low test scores.

proportion is rather less than the 65 percent of variance that could be accounted for by all 30 variables that were used, and less even than the 62 percent that could be accounted for by combinations of only the three most efficient variables, but what parental education alone lacks in predictive power might be made up for, in terms of its use as a fund-allocation instrument, by its simplicity and precision of definition, objectivity, availability, and relative innocuousness as a subject of inquiry when necessary. How much difference in the distribution of funds would be caused by various measures of SES is, again, a matter for empirical investigation. In any case, a complete enumeration of the population would hardly be necessary to determine its SES composition with reasonable accuracy; a carefully designed sample would surely suffice.

If parental education should prove to be an acceptable measure of SES, a method is available for converting it into a new form of IBF which would be consistent with the concept of low SES as a handicap that has been presented in this paper. Dugan (1969) has estimated the amounts of capital embodiment in children that are represented by different levels of parental education. The estimated amounts, based on a measure of foregone income, generally accounted for 80 to 95 percent of the variance in pupils' verbal-skill scores in the Equal Educational Opportunities Survey (Coleman and others, 1966). Furthermore, by calculation of marginal rates of substitution between "parental educational services" and "school resources" (per-pupil expenditures, by state), he arrived at "an indication of the amount of school resources required to elevate a culturally deprived child to an achievement level

comparable to the national norm" (Dugan, 1969). With refinements, this technique might be used to develop ratio indices for a funding formula (for illustrations, see Levin and others, 1971).

It might be objected that, if funding were determined by parental educational levels, school districts might be discouraged from trying to raise those levels, as they might otherwise do by, for example, offering high-school equivalency courses, establishing a community college, or providing other kinds of continuing education -- i.e., another form of the disincentive effect. But the decline in funds that would accompany rising levels of parental education ought not cause dismay, because -- unlike the case with rising test scores -- the need for the funds would be genuinely declining at the same time, as pupils' aptitudes and appetites for learning were being enhanced by the educationally more favorable family situation.

In sum, TBF appears to be defective in concept, impractical in execution, and unnecessary as a remedy for the supposed shortcomings of IBF. It will be interesting to see whether these considerations will prevail over the attractiveness, in the present political climate, of diverting funds from the poor to the middle class with specious reasoning about the importance of raising test scores.

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